Title of Mini Course: Brain Pathology & Associated Clinical Disorders
Instructor: Alex Roth

1. What was the main topic covered in Week 1 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)

In the week 1 of the course, an overview of the clinical disorder, dementia was introduced and studied. It was learned that there existed numerous types of dementia, which included frontotemporal dementia, vascular dementia, Huntington's disease, Korsakoff's condition, and Lewy body-related dementia. The class was also introduced to different ways of examining dementia with use of brain-imaging techniques. Some techniques included MRI, EEG, fMRI, and SPECT.

In the readings for week 1, the class examined the article: "Differentiating the Dementias - A Neurological Approach" by Shaik and Varma. The article gave a detailed summary of the different subtypes of dementia. The readings were appropriate to the week 1 lecture because the types of dementia were examined and a clear overview of the disease was explained. It interesting to visualize that almost all types of dementia had the same problem of the brain being involved in atrophy. The images in the article helped to visualize the real problem patients had. Patients with dementia had ventricles that appeared to be enlarged versus those of healthy individuals that had smaller-sized ventricles. Both the readings and the lecture component helped to understand the concept of dementia as well as its different subtypes.

2. What was the main topic covered in Week 2 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)

In week 2, Alzheimer's disease was the main topic examined and discussed. Throughout the lecture, numerous characteristics of the disease was presented. Some of the most intriguing information about Alzheimer's was that it was known to be the sixth leading cause of death in the United States, with around five million individuals being affect by the disease. It was also noted that the cause of the disease and its cure was yet to be determined.

The readings for week 2 was an interesting way of introducing the topic of Alzheimer's. The article related to the idea of temporal and spatial order memory in patients with Alzheimer's. Different ways of examining patients were examined. One of the experimental tests included, the virtual environment analysis. This was quite interesting because the analysis basically measured and examined the patient's temporal and spatial memory ability with the help of a specialized 3D graphic of different alleys and obstacles. Different tasks were given to the patient to see how they performed on memory capabilities. Correlating the information between the article and the lecture allowed for better understanding of Alzheimer's such as the disease background, causes and treatments, and ways of examining patients.
3. What was the main topic covered in Week 3 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)

In week 3, Multiple Sclerosis was introduced and studied. The background of the disease and its causes and treatments were also touched upon. It was interesting to know the concept underlying the glial cells. The cells participate in numerous functions that include structure, providing nutrients, insulation, and neurotransmission to the nervous system as a whole. It was learned that MS is a chronic, immune-mediated disease with over two million individuals living with it around the world with the cause and cure being unknown.

In the readings for week 3, the mechanism of demyelination and myelination was focused on. The article was a perfect intro to the MS because people with the disease have the condition of their axons demyelinating. Numerous pictures were used to understand the concept of demyelination as it "slows down" neurotransmission and communication among neurons. An interesting idea expressed during the reading was that even though MS patients have axons that demyelinate and create degeneration of the nervous system, some remyelination occurs as well. Everyone, healthy or unhealthy, have some amount of demyelinating axons. However, in healthy individuals, it was learned that more myelination of axons occur than in MS patients. The treatment and possible cure goals of the disease was introduced as the main focus of researchers was to promote remyelination in patients.

4. How did this Mini-Course expand on your understanding of the relationships between brain and behavior, as discussed in the main course (Tuesday/Thursday) lectures? (200 words, 10 points)

During the three-week mini course, three topics have been introduced. The topics of dementia, Alzheimer's, and multiple sclerosis have further expanded my knowledge of different illnesses regarding the brain and the behaviors that result in these conditions. It became clear after the mini-course lectures that finding incorporating the appropriate treatments and finding the correct cure for different illnesses is incredibly time-consuming and expensive. On the other hand, I understood the many interesting characteristics of the behavioral aspect of the three diseases covered. One of these is with dementia, as I thought the behavioral changes such as emotions and personality to physical changes such as speech and movement conveyed a strong message that the individuals experiencing their lives with the disease was truly amazing.

Attending the mini-course and reading the different articles really did much more than just expand my view on the brain and the behaviors that result from different illnesses. It really allowed me to take things into perspective and really understand the existing difficulties the patients may have in their lifestyle. It certainly did much more good than anything else. Listening to our normal Tuesday/Thursday lectures gave me information about certain brain and behavior topics such as psychopathology, neuro-anatomy, and neurophysiology. The mini-course itself really helped me to apply the problems associated with the brain (e.g. demyelination, enlarged ventricles, abnormal behavior) and really apply it to the real world. Like mentioned before the articles did a great job of helping me realize the different tasks people take into treating behavioral abnormalities (e.g. starmaze, statistical analysis, different drugs, memory tests, etc.). Overall, the combination of mini-course and in-class lectures helped me to understand the vast world of brain and behavior relationships.
PSYC 370—Spring 2013
Mini Course Final Report

Name:
Date: 4/16/2013
Grade: ____25____/25

Title of Mini Course: Neuropsychological Research: Clinical and Everyday Applications
Instructor: Ellen Rozek

1. **What was the main topic covered in Week 1 of the course? How did it relate to the mini-course readings for that week?** (100 words, 5 points)

The main topic of the first course was clinical researchers, and how they apply their training to everyday patients. We talked about neuropsychology in the aspects of who does it, why, and how. We also talked about different types of research, and how to interpret results from tests. Both Ellen and our readings described neuropsychologists as specially trained individuals who work in different environments, ranging from evaluation to rehabilitation to research, giving them flexibility for where they can work. The reading talked about the different tests that neuropsychologists can administer, such as achievement, behavioral-adaptive, intelligence, neuropsychological, and personality tests. Ellen then gave us examples of different types of neuropsychological tests (Token Test, Verbal Learning Test, Stroop Test, etc), and the different ways to interpret and diagnose the patient while taking into account the cognitive functions, behavioral observations, medical history, and brain imaging.

2. **What was the main topic covered in Week 2 of the course? How did it relate to the mini-course readings for that week?** (100 words, 5 points)

The second course was about Parkinson’s Disease as well as Alzheimer’s. Both the course and the reading talked about Verbal Fluency in patients. As far as predictors go, young adults have no deficits, older adults have age-related executive function deficits, Parkinson’s patients have motor deficits, and Alzheimer’s patients have semantic deficits. Both also talked about fluency test, such as giving the patient a common letter (such as S) and having the patient generate as many words that they can think of that start with S. We also talked about randomized, double-blind, placebo controlled drug trials, as well as the Neuropsychological Test Batter to test semantic memory and executive function of patients.

3. **What was the main topic covered in Week 3 of the course? How did it relate to the mini-course readings for that week?** (100 words, 5 points)

The last mini-course was about cognitive aging, and the current methods and games that are on the market to try and slow aging. We discussed whether or not these products actually work, and if there is a sound way to slow cognitive aging. Between the article and course we talked about how experts are uneasy about the claims some of the products are making. Also, the issues involved such as how time consuming and boring the games are, and how they’re not proven to generalize abilities well. We also talked about traumatic brain injury, and how sports have...
evolved to try and protect their players from game-related head and brain injuries through equipment development, player testing, and rule changes.

4. How did this Mini-Course expand on your understanding of the relationships between brain and behavior, as discussed in the main course (Tuesday/Thursday) lectures? (200 words, 10 points)

I thoroughly enjoyed the mini-courses, and am glad that we had the opportunity to attend them. While we talk about psychology on a more biological level in class, it was awesome to be able to see that translated into everyday applications and uses. I think that the biggest correlation between the two was our discussion about Parkinson's in both class and the mini-course. In class, we talked about how Parkinson's is when the brain puts the brakes on and is unable to use the accelerator, as well as the symptoms of the disease. Ellen talked with us about how Parkinson's patients have motor deficits, shown through problems with verbal and action fluencies, as well as degenerating cognitive abilities. It was also very helpful in understanding the relationships between brain and behavior when Ellen talked about the different types of tests that neuropsychologists give to patients, why they chose the tests, and what they mean. It was taking an everyday application and breaking it down into what part of the brain it tests, and what the results mean. That was extremely helpful because I've taken classes on the more psychological aspect, and since this class is more on the biological aspect, the mini-courses really tied it together.

* SEND AS AN ATTACHMENT TO YOUR TA, YANA at yanay@ku.edu BY 4/16/2013 *
Name:  
Date: 
Grade: 25 /25

**Title of Mini Course:** Neuropsychological Research: Clinical and Everyday Applications  
**Instructor:** Ellen Rozek

1. What was the main topic covered in Week 1 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)

For the first week of the mini-course, the basics of neuropsychology were discussed. In addition, several tests along with its methods and approaches were examined. To start, the profession of neuropsychology was introduced. Neuropsychologists, though the majority works in private practice, also appear in medical schools, rehab hospitals, and academia settings. Furthermore, other than diagnostics, the role of neuropsychologists also expands to treatment implication work, assessing school/work capacity, and rehabilitation. Therefore, not only do they work with rehab patients, but they also treat patients and clients from neurologic, psychiatric, learning disabled, and dementia backgrounds. A major component of neuropsychology is neuropsychological testing. Testing is important for many reasons such as diagnosis, cognitive and behavioral patterns of an individual, strengths and weaknesses, and the formation of treatment and discharge plans. Furthermore, as mentioned in the reading, neuropsychological evaluation has several advantages that many standard neurodiagnostic tests do not share; such as, it is noninvasive and provides a variety of descriptive information about the patients (intelligence, language function, memory, abstract reasoning, etc). The battery of neuropsychological tests is extensive. Briefly, to name a few, there are the stroop test, digit span, and verbal learning test. Through these tests areas of orientation, attention, memory, and language of an individual can be examined. However, it is important to recognize that there can be a variety of different variables that affect the outcomes of the tests, such as not being able to write in a writing test. Therefore the reading suggests that when examining different neuropsychological assessments there first must be tests to determine its reliability (stability) and validity (meaningfulness).

2. What was the main topic covered in Week 2 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)

During week two of the course, research testing in the field of neuropsychology was examined. Continuing from the previous lecture, in addition to neuropsychological tests, testing in research is also important. Research testing can help differentiate, detect, and diagnose disorders, as well as getting a better understanding of the progression of age and age-related disorders. Then specifically the lecture discussed aging. While healthy, normal aging is characterized by having a better vocabulary, slower processing speed, reduced working memory and reduced inhibitory control, there are drastic differences when compared to Alzheimer’s disease. Alzheimer’s is a progressive disorder with a decline in memory. Typically, the decline in memory will also bring about symptoms of confusion, anxiety, decline in speech, and difficulties swallowing and urinating. An interesting side note, Alzheimer’s can only truly be confirmed through autopsy. Therefore, before the person passes way, the diagnosis of Alzheimer’s is only an educated guess.
While discussing Alzheimer’s, the reading for the week also examined this disease by assessing the verbal fluencies between healthy aging, Alzheimer’s, and Parkinson’s. The goal of the study was to identify and compare the cognitive components that underlie fluency performance. The tests were done by assessing four groups of individuals: healthy young adults (YA), healthy older adults (OA), older adults with Parkinson’s Disease (PD), and older adults with Alzheimer’s Disease (AD). The assessments included letter, category, and action fluency. The predicted measurements of each group were as followed: YA will exhibit no deficits, OA will have some age-related executive function deficits, PD will show motor deficits, and AD will show semantic deficits. The findings mirrored the predictions. It was found regardless of the performance measure; the YA group performed the best and AD group performed the most poorly. From the results, the study concluded that the pattern of fluency performance generally looks identical regardless of how performance is measured. Therefore, it was suggested that fluency tasks can be used as measures of executive function.

3. What was the main topic covered in Week 3 of the course? How did it relate to the mini-course readings for that week? (100 words, 5 points)
The final lecture of the course looked specifically at applications of neuropsychology. The lecture was split into two sections: cognitive aging and traumatic brain injury. For the cognitive aging section, video were examined. In society today, there seems to be a growing fear of getting diseases like Alzheimer’s and, in general, losing your memory. Therefore, the video game market has developed games such as Brain Age I, II and III along with websites like lumosity that calm to train and stimulate your brain to help people remember more, concentrate better, react quicker, and so on. The article that was assigned for this lecture looked directly at those claims; do those mind games really work? It was found that those games work to some degree, but the improvements found were very limited. For example, games that were directed at increasing your concentration did only just that and none of the other areas were found to have improved. It might also be noted that the individuals had to play the games for hours a day and for several days a week to show improvements. Moreover, the improvements found would disappear if the individuals did not continue playing the games. Therefore, it was concluded the best prevention of cognitive disease and maintaining a healthy cognitive function is a combination of social relations, diet, and exercise. As for the traumatic brain injury section, concussions were discussed. Mild head injuries like concussions, which are due to the acceleration or deceleration of the brain rapidly, causes shearing, stretching, and necrosis (tissue death) to the brain. Concussions are most frequently observed in the game of football. Which brings about the question whether football is too dangerous to play? Therefore, to better protect the athletes, we have witnessed the progressive enhancements of the players’ helmets.

4. How did this Mini-Course expand on your understanding of the relationships between brain and behavior, as discussed in the main course (Tuesday/Thursday) lectures? (200 words, 10 points)
For me, this mini-course brought the topics of brain and behavior into a full circle. From the mini-course, physiological changes within the brain that are discussed during the main course were linked with real-life applications, which made it more understandable. One of the most interesting realizations I have had after this course is my change in perspective on the importance of neuropsychology. Prior to class, I have always thought neuropsychology was just used as a diagnostic instrument. However, it definitely more than what meets the eye. Neuropsychology can be used to aid in prevention of cognitive diseases and maintenance of cognitive health. These efforts are evident in instances such as sports, where there has been an increasing amount of people promoting concussion awareness and ways to prevent it, as well as simply in everyday life, such as the production of video games and website as discussed earlier. These efforts imply that in the future patients, who have suffered strokes or other problems, where parts of their brain have been injured have hope. For instance, as we learned in lecture, in Parkinson’s Disease there are lesions from the basal ganglia to the substantia nigra. The decay in movement is caused by
the increase output of the indirect pathway and the decrease output on the direct pathway. While there are no cures for this disease, with the continuing research and testing efforts in the field of neuropsychology, researchers can better enhance the patients’ quality of life by finding alternative outlets around the lesions, or noninvasive outlets such as activities that can strengthen the stimulus between the basal ganglia and the substantia nigra in the cortex. Another example of potential impact of neuropsychology can be helping patients with lost limbs. In lecture, we learned that when a person loses a limb, the nerve of that region will be severed. After the loss, the somatosensory cortex will reorganize itself to better adapt to the environment. However, it is not known how long it will take for the adaption to occur or how much variation is present among individuals. This is where neuropsychology can be of an impact. With the assistance from neuropsychologists, intervention programs or innovative rehab activities can be developed to help speed up the adaptation process or improve the newly adapted cortex to be able to perform a wider range of tasks.